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ABSTRACT

This report is a compilation of the papers presented at a colloquium on wilderness management and a synopsis of discussions held during the conference. The conference theme was how to determine and monitor the most significant features and qualities of the wilderness resource. Generally, participants identify solitude; pollution-free air and water; and natural scenery, fish, vegetation, and wildlife as the prime wilderness values. Papers include "Wilderness Qualities and Backcountry Management at Grand Teton National Park" (Dan Burgette); "Critical Wilderness Qualities, Recreational Use, and Monitoring Needs" (David N. Cole); "Wilderness Quality, Impact Conditions, and Their Monitoring" (William E. Hammitt); "High Quality Wilderness Conditions" (Robert C. Lucas); "Free To Be You or Me Or Some Random Thoughts about Wilderness Management" (Robert Manning); "Significant Qualities of Wilderness and Monitoring" (Jeffrey L. Marion); "Conditions, Features, Qualities Composing a High Quality Wilderness Resource" (Stephen F. McCool); "Some Thoughts on Two Questions" (Toivo Sober). One paper (Marion) contains 12 references. The summary of discussions lists questions addressed in the colloquia of the National Outdoor Leadership School and proposal for future sessions. (DHP/CBH)

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THE NATIONAL OUTDOOR LEADERSHIP SCHOOL

SIGNIFICANT WILDERNESS QUALITIES: CAN THEY BE IDENTIFIED AND MONITORED?

Proceedings of the Third Annual NOLS Wilderness Research Colloquium
August 10 - 15, 1987

David N. Cole and Robert C. Lucas, Compilers

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INTRODUCTION

The third Research Colloquium, sponsored by the National Outdoor Leadership School (NOLS), convened the week of August 10-15 in the Popo Agie Wilderness, Shoshone National Forest, Wyoming. The purpose of these colloquia is to facilitate interaction and discussion between wilderness managers, researchers, and NOLS personnel in a wilderness setting. At each colloquium, discussion centers around a selected theme. For the third colloquium, participants were asked to write a short paper on the theme. This report is a compilation of those papers, along with a synopsis of discussions held during the colloquium.

The theme was formulated in the following manner: Given that the goal of wilderness management is to avoid the impairment of significant conditions, features and qualities of the wilderness resource, 1) what are the most significant of these conditions, features, qualities? and 2) how can they be monitored to ascertain whether or not they are preserved?

This theme was selected because it is fundamental to all wilderness management. Management should be focused on problems that threaten the most significant qualities of wilderness. And research that addresses these threats, problems and potential mitigation measures should be given a high priority.

A more specific reason for selecting this theme relates to interest in several recently developed management planning systems, such as Limits of Acceptable Change and Visitor Impact Management. These systems link management objectives and monitoring by proposing that management be driven by monitoring of key indicators--to determine whether or not management objectives are being met. These systems are being widely embraced because they provide for objective, generally agreed upon judgments about where wilderness qualities have been or are being lost; however, their value hinges entirely upon the significance of the indicators that are selected. Indicators must be indicative of the most significant wilderness qualities (or impacts on those qualities) and it must be feasible to accurately monitor those indicators. Otherwise, wilderness qualities can erode away, despite monitoring data that indicates objectives are being met.

Many of the most significant wilderness qualities are relatively intangible. Congress wrestled with wilderness definitions for eight years before passing the Wilderness Act, leaving definitions poetic and rather general. General and intangible qualities are particularly difficult to monitor. Can they be monitored or can meaningful surrogates be developed? Further wrestling with this difficult theme seemed an appropriate task for a collection of managers and researchers some 23 years after passage of the Wilderness Act.

We gathered a diverse group of people for the colloquium. We attempted to include people from as many parts of the country, as many affiliations and as many backgrounds as possible. Colloquium participants were:

Dan Burgette--Backcountry Management Ranger, National Park Service, Grand Teton National Park, Wyoming.

David Cole--Research Biologist, U.S. Forest Service, Intermountain Research Station, Montana.

Jim Currivan--Wilderness Program Leader, Bureau of Land Management, Arizona.

Tim Easley--Research Advisor, NOLS, and Chairman, Department of Forest Resources, University of New Brunswick, New Jersey.

Bill Hammitt--Professor, Department of Forestry, Wildlife, and Fisheries, University of Tennessee.

Drew Leemon--Program Planner, Wyoming Branch, NOLS.

Bob Lucas--Project Leader, U.S. Forest Service, Intermountain Research Station, Montana.

Bob Manning--Associate Professor, School of Natural Resources, University of Vermont.

Jeff Marion--Research Scientist, National Park Service, Mid-Atlantic Region, Pennsylvania.

Steve McCool--Professor, School of Forestry, University of Montana.

Dave Neary--Director, Wyoming Branch, NOLS.

Debbie Overton--Graduate Student, College of Forestry and Natural Resources, Colorado State University.

Dave Parker--Board of Directors, NOLS, Washington, D.C.

Sukey Richard--Assistant Marketing Director, NOLS, Wyoming.

Toivo Sober--Wilderness Specialist, U.S. Forest Service, Kawishiwi Ranger District, Superior National Forest, Minnesota.

Dick Spray--Wilderness Staffer, U.S. Forest Service, Southwest Region, New Mexico.

The diversity of ideas and perspectives in the papers that follow, all inspired by the same theme, reflect the range of backgrounds and interests of colloquium participants.

WILDERNESS QUALITIES AND BACKCOUNTRY MANAGEMENT AT GRAND TETON NATIONAL PARK

by Dan Burgette

The question that we have been asked to address--- what are the conditions, features, and qualities that make up a high quality wilderness experience?-- is central to how we manage wilderness areas. The personal philosophy of wilderness managers has led to a variety of *de facto* answers to this question in the past. Some managers seem to think that the only condition required is proposing an area as wilderness, and saying that it will be managed according to the spirit of the Wilderness Act. Others are asking questions about Limits of Acceptable Change, how is wilderness managed differently than backcountry, and can wilderness management actions be upheld in court when challenged? For many, there are more questions than answers elicited by the above question. Hopefully this colloquium can focus the questions, and provide direction toward the answers. In Grand Teton National Park there are 135,680 acres of recommended wilderness that are to be managed so as to preserve the wilderness character and values until Congress decides whether to include the area in the National Wilderness Preservation System. Wilderness management in the Tetons is complicated by three things. First: each summer about 165,000 people hike in the recommended wilderness area. Second: most of those hikers don't know that they are in recommended wilderness. Third: in 1974, Wolfley analyzed backcountry use in the Tetons and found that most users were attracted by the physical aspects of the park. They were not overly disturbed by the visitor use levels, and most users were seeking a less than "pure" wilderness-type experience.

Even though solitude is not necessary for most Teton visitors to meet their expectations, it is supposed to be a key attribute of a wilderness experience. It can be argued that most backcountry visitors have a high quality experience in the wilderness. Wilderness purists wouldn't have a high quality wilderness experience at Hidden Falls on a busy day with up to 370 people passing per hour. However, the wilderness purist could meet his expectations in many of the pristine areas of the park.

As Cole has written, limitations on wilderness recreational use cannot often be based on ecological factors. Therefore, use limits must be based on sociological factors. User expectations concerning numbers of people encountered per hour, time of day, and location are very important in determining quality of wilderness experience. Physical impacts such as trail and campsite location, size and condition are aesthetic factors as they relate to expectations of users and managers.

Wilderness management in an area such as Grand Teton National Park is a compromise. The ideals of the Wilderness Act are the guide. The numbers of people that visit the backcountry to see the spectacular scenery can easily find "a primitive and unconfined type of recreation." However, finding "outstanding opportunities for solitude" is impossible at some locations at some times. Finding opportunities for solitude is always possible at many locations, however. The result of pragmatically blending the political realities of managing a popular area with the ideals of the Wilderness Act is a compromise.

The compromise defined in the 1987 Backcountry Management Plan for Grand Teton National Park stratifies the backcountry into five Management Zones. Zone I is comprised of corridors along gateway trails. Zone II is corridors along maintained trails not in Zone I. Zone III is semi-pristine areas with unmaintained trails created by visitor use. Zone IV is pristine areas. Zone V is open space, such as sagebrush flats, not in other zones. Management objectives are defined for each zone, with management actions outlined.

Stratifting the backcountry recognized that not everyone needs pristine resources to have a high quality wilderness experience that meets their expectations. Visitors who can meet their expectations in Zones I or II will be directed there. Zone III areas are mainly used by climbers, or hikers looking for areas away from the crowds. Zone IV areas are intended for wilderness purists that need pristine areas to meet

their expectations. Zone V areas are seldom used for recreational activities.

By stratifting the resource and the management actions for various zones, the visitor is provided a range of opportunities that should meet the needs of the hiker wanting to look at the scenery, and the wilderness purist that doesn't want to see many others in a pristine setting. At the same time, the resource is being preserved so that future generations should have similar opportunities to meet their expectations for a high quality wilderness experience.

The ideals that are the foundation of the Wilderness Act are hopefully evident in this compromise. Most of the use is in the Zone I and II trail corridors. Most of the recommended wilderness is in Zones III and IV. But there are difficulties to be addressed. Campers are managed by a permit system. Day use, the majority of backcountry use is uncontrolled. As the population grows and recreational pressure increases on a finite amount of wild land, where and how should controls be established to protect the opportunities for quality wilderness experiences? And when established, will the limits be defensible in court if challenged like limits at Mt. Rainier National Park were?

So back to the question-- what is it that makes a quality wilderness experience? It is assumed that the setting needs to be natural-- by someone's definition. After that it seems to depend on the user's expectations. How many human impacts or encounters that are acceptable depends on the individual's expectation. The fact that over 300 people per hour can pass Hidden Falls with hardened trails and buck and rail fences to channel foot traffic and people still have a positive experience indicates that their expectations are different than campers at Cirque Lake that don't expect to see (m)any others. It is clear, however, that there must be some upper limit of encounters per hour beyond which few visitors would consider the experience positive. Determining these sociological limits, in light of management objectives, seems to be the key to answering the question.

When discussing use limits that will allow continued high quality wilderness experiences, several questions arise relative to different user groups' expectations. How many people can meet their expectations in a natural setting with given characteristics? How does this number impact on other potential user groups? How many people per hour, for example, is tolerable for which groups? What educational means can be used to effectively channel groups into areas that meet their needs? How important are physical impacts such as campsites or fire rings per area to various user groups? What strategies are most effective in educating visitors that aren't attuned to wilderness behavior ethics? How can visitors be taught the importance of not visiting pristine areas unless they *need* pristine areas to meet their wilderness experience needs? Where in these educational efforts do we consider the effects of talking about pristine areas? One reason that these areas are still pristine is because not many people visit them. Educating people about them may be like advertising them.

An underlying question deals with what should the management objectives for a wilderness area be. Whose definition of "quality wilderness experience" should be used? Obviously the purist's definition has been exceeded in Grand Teton's Zone I, and in some Zone II areas. But the definition for the average user has likely not been exceeded. Should a more "pure" definition be the standard? Should the entire wilderness area be held to the same standard, or is stratification tolerable? Clearly, reducing the standard for an entire wilderness area so there are no pristine or semi-pristine areas is unacceptable. But if a more "pure" standard, based on the "outstanding opportunities for solitude" clause is the basis for area wide management, how can managers defend necessarily strict use limits in court?

In Grand Teton National Park, past managers started use limits such as no campfires above 7,000 feet elevation, party size of six maximum, groups of twelve maximum, no groups allowed to camp in off-trail areas, horse users must stay on maintained trails and use processed feed for

their animals. As a result, physical impacts, and certainly ecological impacts, are not the biggest challenges for future managers. Sociological factors that affect the quality of wilderness experience, especially among day users, are not well understood. Social pressures that come with crowds that are attracted to a popular national park will be the biggest challenge for future managers concerned about providing opportunities for quality wilderness experiences.

CRITICAL WILDERNESS QUALITIES, RECREATIONAL USE AND MONITORING NEEDS

by David N. Cole

Clearly the primary goal of wilderness management is to protect the qualities that make an area valued as a wilderness resource. A number of agents of change can degrade these qualities. Some of these sources of degradation are the result of on-site activities, such as recreation and mining; others are the result of external activities, such as where industrial development pollutes air or water, if entire watersheds are not protected. Often these threats are quite indirect, such as where suppression of fires alters fire regimes or where elimination of winter habitat outside the wilderness alters populations within the area. The activity that I will address here, recreational use, is one of the most obvious, direct, on-site sources of degradation, but it is only one potential source. Depending upon the wilderness at issue or, more importantly, one's personal opinion about the most important qualities of wilderness, recreational use may or may not be among the most important sources of degradation.

Regardless of the source of degradation, the general qualities of wilderness in need of protection are: 1) natural conditions and processes, and 2) a perception of naturalness, wildness and solitude. The natural conditions of concern might usefully be subdivided into vegetation and soil, animals, water and air, as long as we recognize the complex interactions between these elements. Perceptions might be divided into interaction with other humans and interaction with the natural environment. Obviously there are also links between naturalness and perceptions of naturalness.

Although perceptions of naturalness and wildness have been severely eroded in many places, this too is not a problem everywhere or for everybody. As with other animals, only certain visitors in certain places are highly susceptible. Those that seek out truly wild places-- and know how to find them-- can do so within the wilderness system, although there are some specific areas where this type of use is not allowed. Similarly, the susceptibility of many of those who choose to visit more popular areas seem low. This might include those whose preference is for more highly altered environments -- well-maintained trails or established campsites, those who do not perceive much of the alteration around them and those who enjoy contacts with local authorities. In many places, this represents the majority of visitors.

The most susceptible people seem to be those that seek wilder places, but that are not comfortable leaving many of the conveniences, such as trails; the most susceptible places seem to be those currently wild places that are relatively accessible. Solitude and the perception of a natural environment are vulnerable in such places and are frequently difficult for such people to find. Along with protection of threatened animals, I think that solitude and apparently natural environments, in undisturbed but relatively accessible places, are the wilderness qualities most threatened by recreational use.

In contrast to the difficulty of monitoring animal populations, monitoring of these other qualities has been researched extensively. One consistent finding is that trails and campsites develop even at use levels so low that little interaction between groups occurs. This suggests that if we monitor the development of trails and campsites and take actions to prevent their proliferation, there is little need to monitor visitors and their interactions (in little-used places.) In such places, recording information on the presence or absence of trails and campsites is probably more important than information on their condition.

Although high levels of the qualities that make wilderness unique cannot be attained in popular places, limits on degradation can be developed. Monitoring of interactions between visitors is probably critical. Local disruption of natural conditions will be high and the perception of naturalness will be severely reduced. Disruption of these qualities can be limited, however, if monitoring of visitation keeps encounters to a reasonable number. Nevertheless, unless popular places receive in-

tensive site management (concentration of use and rehabilitation of closed impacted areas), campsites and trail systems should also be monitored in popular places.

In summary, the most important wilderness qualities *with a high potential for disruption by recreational use* , the places where disruption is most likely, and the types of monitoring that are most critical seem to be:

1) Undisturbed animal populations. Probably currently most vulnerable in lightly used places with increasing use (assuming susceptible species are already gone in popular places.) Uncertain how best to monitor.

2) Undisturbed vegetation and soil and perception of no impact in places that are lightly used but where use is increasing. Monitor the distribution of campsites and trails.

3) Reasonable levels of solitude in popular places. Monitor encounters between groups, particularly in destination areas.

4) Limited degradation of vegetation, soil and water in popular places. Monitor campsites, trail systems, and perhaps water quality, at popular destination areas.

It seems to me that air quality is not subject to substantial degradation from recreational use. Moreover, water, vegetation and soil seem less subject to severe degradation than the other qualities. Where water bodies or particular vegetation or soil types are rare and subject to concentrated recreational use, serious degradation may occur; however, I think that this is not common in wilderness. Localized deterioration occurs in many places, but from a larger perspective this does not threaten the integrity of the wilderness resource.

Animal populations, on the other hand, might be substantially altered-- in population structure, distribution and behavior- - by recreational use. This certainly does not apply to all species in all places. It applies primarily to larger mammals, birds and certain fishes, I think, in addition to a few localized populations disturbed by concentrated recreational use on rare habitats (this latter case is similar to that for vegetation, soil and water.)

Unfortunately, we know little about the nature and severity of recreational impacts on animals. We can make some intelligent speculation, but little documentation is available. We have a number of case studies of species and places where recreational disturbance of animals is occurring, but there has been little attempt to integrate this into a coherent perspective on threatened species and places. This must be done before monitoring programs can be efficiently targeted at potential degradation.

WILDERNESS QUALITY, IMPACT CONDITIONS AND THEIR MONITORING

by William E. Hammitt

We were asked to comment on the quality of wilderness, use impact conditions and how they might be monitored. After thinking about this task and after hearing trip participants struggle with it, I feel my best contribution to the topic might be to share some of my thoughts in clarifying the topic.

Quality of the Wilderness Experience: Although user impacts to the wilderness resource and wilderness experience detract from the natural and solitude conditions of wilderness, I am not convinced that user impacts are major deterrents of the wilderness experience. Even with higher levels of visitor encounters and campsite trampling, the majority of wilderness users are able to find enough remoteness, naturalness, and privacy when the *entire* trip is considered to realize a "satisfying" wilderness experience. I feel the issue at stake is, "are we to provide the 'most satisfying' wilderness experience we can, or only satisfying experiences?" What degree of quality are we to provide? There is no doubt that user impacts detract from the quality of wilderness, but it may not be significant.

User impacts: Ecological vs. Recreational Significance: It is generally agreed that wilderness should be managed on an ecosystem basis. If this is so, then do user impacts affect the conditions of wilderness on an ecosystem basis? Are campsite impacts and trail encounters significant factors at affecting the processes of wilderness ecosystems and the quality of wilderness ecosystems? The answer is probably *no* for most impacts. For example, campsite trampling and trail encounters affect a minimal portion of the total acreage in wilderness ecosystems. However, trail erosion might contribute considerable sediment to small streams and significantly affect those restricted aquatic ecosystems within wilderness. Wildlife disturbance may be another ecosystem level impact.

While use impacts may not be significant factors in destroying the quality of wilderness ecosystems, they are significant factors in detracting from the quality of wilderness recreation experiences. In other words, user impacts, even when called "ecological impacts" may not be significant factors in affecting wilderness ecosystems but can be significant factors affecting wilderness recreation and experiences. User impacts in wilderness have recreation significance, while probably little ecosystem importance.

Monitoring conditions: Two systems or levels of monitoring are called for, one for recreation quality impact conditions and a second for ecosystem quality impact conditions. Both have significance but they are probably mutually exclusive with most wilderness user impacts.

HIGH QUALITY WILDERNESS CONDITIONS

by Robert C. Lucas

At the national wilderness preservation level, two conditions would seem important, representation of a wide range of ecosystems and a distribution of wilderness that at least roughly corresponds to the distribution of population (to facilitate opportunities to experience wilderness.) There are major problems with both criteria, but I won't elaborate here.

The value of individual wildernesses, which is closer to our concern here, is reflected in the total system. This value depends on two general sorts of conditions, one bio-physical and one experience-related. The existence of natural processes and resulting natural conditions, in all their natural variability, is the first critical quality. It consists of many more specific interconnected conditions affected by a variety of forces. Because natural processes have often been substantially altered and rarely can be fully restored, both processes and conditions need to be considered. Ideally, we would let totally natural processes operate, and whatever conditions resulted would, by definition, be entirely natural. In the real world, it is not so simple; remedial action will sometimes be necessary.

At the broad scale of an entire wilderness or major sections of it, wilderness biophysical values depend on natural vegetation communities, usually influenced by fire as well as climate, soil, altitude, etc. Fire is generally the force most altered by "technological man," but climate is increasingly a concern, and, in some places, livestock grazing also alters natural vegetation.

Wildlife species in numbers and distributions that would occur naturally are another important component, and one that is probably quite sensitive to internal disturbance by recreation, by alterations of fire regimes that affect vegetation, by competition with livestock, and by outside pollution that may affect water and vegetation, as well as loss or degradation of parts of wildlife ranges outside wilderness.

Water may be polluted by visitors, although it does not seem particularly sensitive to recreational use, by inflows where a wilderness does not contain stream headwaters, or by acid rain and deposition.

At the site scale (what an observer on foot could see), human use impacts that are minimal in degree and few in number enhance wilderness natural values. Grazing affects some places, water storage fewer places, and mineral activities very few locations. In contrast, recreational use affects many places in almost every wilderness. Overall, trail impacts probably result more from trail construction than use, but campsite impacts from visitors and sometimes their stock are a serious concern. It is true that effects on natural community values are probably little more than tiny scattered "pimples" of visitor impacts, but experience effects may be significant.

The experience that yields important wilderness values is described in the Wilderness Act as "enjoying wilderness as wilderness" and defined as offering "outstanding opportunities for solitude or primitive recreation." Challenge is added in the so-called Eastern Wilderness Act. The "or" between solitude and primitive recreation causes some confusion and semantic quibbling. The most common view is that "or" is used as in "or, in other words," not as one or the other. I think some degree of solitude must be an integral part of primitive recreation. This experiential value also includes a composite of interconnected conditions. Development should be simple and limited, ideally just a minimal, primitive trail system. Visitor freedom and minimal regulation are desirable. Use should be light enough that "outstanding opportunities" for solitude (few contacts with other people) are available, and in the most heavily used areas, encounters are not clearly excessive for a wilderness experience. Campsite solitude is most critical. Visitor experiences should take place in a setting that at least can be perceived as essentially natural. Man's impacts at campsites are the most widespread and important factors affecting perception of naturalness.

Monitoring is absolutely essential, but must be selective. The following are listed

in order of priority in my view, first for widespread conditions, then site impacts. 1) Area-wide, air pollution effects must be monitored closely and frequently. Effects may be substantial, almost irreversible, and are often not obvious or well understood. 2) Wildlife effects may be large, but are poorly understood. They are often not obvious, and can be irreversible. Methods for monitoring mobile and furtive animals under wilderness conditions need to be developed and adapted from wildlife censusing techniques. 3) Determining vegetation conditions and fire effects in light of knowledge of natural fire regimes and their effects is essential. I put it last among area-wide monitoring only because it probably can wait better than air quality related values and wildlife. Fire has been excluded for over 70 years in most places, and the rate of change is usually slow enough that no irreversible consequences are likely over the next few years.

Site monitoring priorities are: 1) Campsite numbers and severity of user impacts. a) Within this general category, the size of the area essentially devegetated of ground cover heads my list. It, and number of sites, indicate the aggregate impact of camping. It is the factor most likely to affect visitor perceptions of naturalness. b) Tree damage is next. It also affects perceptions. Unlike some vegetation loss, it *can* be avoided. Research to clarify camper perceptions of campsite impacts is needed to help design monitoring. 2) The solitude dimension. a) Campsite isolation is the specific aspect most needing monitoring. Trail encounters are less significant, and likely to be acceptable if campsite solitude and campsite impacts are kept at acceptable levels. Systems for monitoring campsite isolation are poorly developed and need R&D work. Visitor perceptions of campsite solitude are better understood than perceptions of impacts, but doubts about past social carrying capacity concepts suggest a need for reexamination.

Standards should vary within a wilderness, extremely strict in some parts, less so in other parts (the opportunity class concept in Limits of Acceptable Change). This means campsite condition and isolation monitoring can't concentrate just on the most-or-least-used sections; standards, although different, may be threatened anywhere. Results of initial monitoring could identify those areas needing the most intensive monitoring.

FREE TO BE YOU OR ME OR SOME RANDOM THOUGHTS ABOUT WILDERNESS MANAGEMENT

by Robert Manning

This is a difficult topic. Whoever thought up these questions should be proud of themselves for developing such clear insights into the heart of wilderness management. Either that, or they should be ashamed of themselves for putting their colleagues (and former friends) in such an awkward position. After some thought, I've decided to approach these questions much like some of my students approach my exams: they simply begin to write and hope that somewhere in their narrative they might stumble upon the (an) answer. Here goes . . .

Science vs. Standards

A few years ago I read a new children's book to my daughters titled *Free to Be You and Me.* The message of the book was that it's okay to be different. Sure, we're all human beings, and so we all look pretty much alike and even have some relatively standard or common forms of behavior. But within these broad parameters of "humanness" or "oneness" exist a multitude of individuals: we all look a little different than our friends and neighbors and, for the most part, we tend to think and act a little differently as well. In the end, the book suggests we take pride in both our commonality and uniqueness. We should be proud of our basic physical and mental capacities which bind us as a species, and we should revel in the ways each of us as individuals use and apply those capacities.

In moving between my family and professional lives, I was reminded that wilderness areas too, though they are all part of the larger National Wilderness Preservation System, are different, even unique. Wilderness managers are individuals too. (Wilderness researchers, I think, are just plain "different.") This obviously isn't a new idea, just a reaffirmation. We've argued for years about the difference between eastern and western wilderness. More recently, Alaska has been added to the discussion as a potential third "type" of wilderness. Several years ago someone suggested a series of wilderness zones (Classes I - V) varying in size, naturalness, remoteness and management prescriptions. There were even several specialized zones for horseback riders, OEC users and subsistence living. Indeed, Rod Nash has driven home the notion that wilderness is a relative concept: areas with any types and levels of qualities can be (and are) considered wilderness.

The moral of the story? Let's not be afraid to recognize that wilderness areas differ from one another and to manage them accordingly. In our search for the "most significant . . . conditions, features and qualities" of wilderness, let's recognize that these might (will) vary from area to area. This is not to say we shouldn't seek to understand more deeply the things people value about wilderness and to manage wilderness more effectively based on this knowledge. But in our quest for scientific management, let's not standardize the wilderness.

Mildly interesting, but not that helpful, huh? Let's try something else . . .

Tourism, Sense of Place and Wilderness

The tides of student interest ebb and flow across the campuses of America. In the park and recreation departments of the nation,

the current buzz word is "tourism." Students once interested in state and national parks and wilderness now want to get rich. Those of us on the faculty must teach them how. (Perhaps this is the ultimate confirmation of that cynical adage "those who can't, teach.")

Two years ago I developed and taught a new course at the University of Vermont called Tourism Planning. I must admit I've enjoyed it more than I anticipated. One of the reasons for this is that I've borrowed heavily from my more long-standing interest in public land management. In particular, I've tried to apply the concept of carrying capacity to the complex places called tourist areas. I've found some nice parallels. For example, I've found an emerging concept in the planning literature called "sense of place." Like carrying capacity, it suggests that tourist areas draw visitors because these areas possess certain qualities which make them distinctive and appealing. Moreover, these areas can accommodate only certain types and levels of development and use before their special qualities re-diminished to an unacceptable degree. But what are these special qualities? To plan and manage tourism effectively, we must know what needs to be maintained or preserved.

We've begun some very preliminary work on exploring sense of place in Vermont. It seems clear there are some environmental factors involved. There must be mountains, clear babbling brooks, and forests interspersed with clearings of a pastoral or agricultural nature. And there must be cows, preferably more cows than people. There are also important social and cultural factors like small, compact villages with white clapboard churches, village greens, and conservative residents with a dry sense of humor who generally punctuate their conversation with "yup", "nope" and "ayuh" (which can mean both yup and nope depending on the circumstances.) There should also be some management factors such as downhill ski areas, hiking trails, country inns, and good hunting and fishing.

But sense of place seems to be more than these discrete entities: rather it is the *unique combination* of these qualities which marks and defines the distinctiveness of special places. There is a synergism in sense of place which makes the whole more than the sum of its parts.

I expect there is a "wilderness" sense of place as well. From previous research we know that certain factors or variables are important to some wilderness visitors. I've compiled a short list of these factors from my own reading of the social science literature (Table 1.) Others have longer lists. But wilderness is surely more than these individual factors or even a collection of these factors. Isn't it interesting that we can rarely explain statistically more than 20-30% of the variation in satisfaction among wilderness visitors? Wilderness is a total, larger environment created by a combination of environmental, social and managerial elements.

Table 1. Potentially Important Elements of the Outdoor Recreation Environment.

NATURAL ENVIRONMENT	SOCIAL ENVIRONMENT	MANAGEMENT ENVIRONMENT
Trail erosion	Number of trail encounters	Use limitations
Campsite erosion	Number of camp encounters	Type of use limitation
Campsite groundcover	Type of groups encountered	Control over route or itinerary
Damage to trees/shrubs	Size of groups encountered	Use fee
Water quality	Behavior of groups encountered	Zoning
Presence of wildlife	Location of encounters between groups	Type of access
Litter	Perceptions of alikeness between parties	Party size limits
Vandalism	Noise	Trail standards
Shading of campsites	Rule violations	Campsite standards
Location proximate to water body or other attraction	Perceptions of naturalness of the environment	Law enforcement
Opportunities for activities (e.g. fishing, hunting)	Perceptions of regimentation by management	Rules and regulations
	Perceptions of opportunities to fulfill selected motivations (e.g. closeness to nature, risk, avoid crowds)	Presence of rangers
		Presence of sanitary facilities
		Type of sanitary facilities

The organizers of this colloquium ask, "will keeping the number of fire rings below some agreed-upon number preserve what we really value about wilderness?" The answer seems to be, inescapably, "no." Attention to fire rings is necessary but insufficient for good wilderness management.

Let's try another idea . . .

Daniel Boone, Bob Marshall and Bob Lucas

Legend has it that when Daniel Boone could see the smoke from another cabin it was time to move on. To him wilderness had to be absolutely pristine and pure. Bob Marshall lived in a different time, only a few generations ago. He saw civilization encroaching on the last great unexplored reaches of the North American continent and he hiked extraordinary distances to seek solitude and naturalness. Bob Lucas is here with us now. He flies and drives long distances to find the islands of wilderness left in our sea of civilization. He reserves his wilderness permits in advance, pays his entrance fees where necessary and endures the thousands of other modern-day wilderness enthusiasts just like him. So who is better off, Daniel Boone, Bob Marshall or Bob Lucas? I expect it would be a tie: all three would score in the high range of our Likert scales of wilderness satisfaction for they are all creatures of their times.

The point? Wilderness is a relative concept not only spatially, but temporally. Again, I defer to Rod Nash: wilderness is created and defined by culture. It seems to follow that as our culture changes, so will wilderness. In fact, if wilderness doesn't "keep up with the times," it may disappear altogether. It seems to follow further that the "conditions, features and qualities" which define wilderness can be expected to evolve over time. Given the pace of change in contemporary American society, they may change quite rapidly.

I think I've opened up a can of worms with this topic. I better move on . . .

"Aggressive Flexibility": A New Management Style

Americans love management styles. Consequently, I'm going to suggest a new one aimed at wilderness management. It may seem a bit paradoxical at first, but bear with me. After all, we've just come through a period of "hands off" management based on Ronald Reagan's personal style and look how far that's gotten us!

First, wilderness managers must get aggressive. The organizers of this colloquium point out that all of the wilderness management planning frameworks of today-- LAC, VIM, ROS -- call for establishment and maintenance of explicit, quantifiable management objectives. Can so many wilderness researchers be wrong? (Don't answer that!) Wilderness managers must get on with this process as quickly as possible so wilderness conditions don't change incrementally and inexorably in unknowing and possibly undesirable ways.

Now I know what you're thinking. Given the uncertainty over what the proper conditions of wilderness are, or should be, how can this be done? That's where flexibility comes into play. First, wilderness management plans are unlikely to be either perfect or permanent. (My apologies to the wilderness managers I know I've just offended.) Almost by definition, planning is an iterative process. That is, we are constantly planning or recycling through the planning process. Thus decisions made in the planning process can

always be revised when necessary or desirable. Indeed, the monitoring phase of planning demands that we monitor and evaluate conditions and revise plans appropriately. This should give some comfort to wilderness managers and encourage them to proceed with planning without fear of irreversible or unduly heavy implications. Thus, while decisions about management objectives should be approached with all due care and consideration, they are not immutable and should not forestall the management planning process.

Second, establishment of management objectives is ultimately a value judgment which must be made by wilderness managers. Research and planning can help by developing important bases of information on current wilderness conditions and use. But establishment of the explicit and qualifiable management objectives called for is not yet a precise enough matter to be determined exclusively through research. Given that human values are involved, it probably never will be. Managers must be prepared to contribute their reasoned judgment in determining management objectives.

Finally, wilderness managers should take into consideration the diversity in public conceptions of wilderness. Management objectives should be formulated to reflect a range of conditions for factors important to wilderness visitors. Thus each wilderness area or zone should be considered as an integrated component of the total wilderness system rather than a separate and isolated entity. This should make decision making a little less formidable by adding diversity and flexibility to the management process.

Let me try one more idea . . .

Recreation is Only One of Many Wilderness Uses

To this point my paper has been written as though recreation were the only use of wilderness. It isn't. In fact, it may not even be the most important. A recent study in Colorado, for instance, found that residents of that state would pay $14/year to maintain their wilderness areas as recreation reserves. However they would pay even more -- an additional $19/yr-- simply to be comforted that such areas exist and that they are being protected for future generations. Wilderness apparently serves many values in society including ecological protection, scientific research, cultural and historical meaning, an expression of moral and ethical commitment, aesthetics, intellectual and artistic creativity, political freedom, physical and mental therapy, religious and spiritual meaning, and even economic worth. Wilderness should be managed for these values as well as recreation In fact, these values may suggest more restrictive "limits of acceptable change" on wilderness qualities than recreation alone. Try to imagine the carrying capacity -- and the management objectives -- of a wilderness area or zone that is to be managed *primarily* for scientific research or as an expression of man's moral and ethical commitment to nature.

At this point I'm going to invoke my college exam analogy and say that I'm out of time. Did I answer any of the questions?

SIGNIFICANT QUALITIES OF WILDERNESS AND MONITORING

by Jeffrey L. Marion

The value of wilderness resources is directly related to their wildness. The American legal concept of wilderness requires an expansive area without roads, buildings, powerlines or any other substantial human imprint. Wilderness also connotes natural ecosystems unaffected by man including clean water, clean air, and naturally balanced plant and animal populations composed of a pre-Columbian complement of native organisms. Such areas have many specific values and uses, but all are dependent upon the continued naturalness of these areas. Their wildness, in whatever specific form, is what distinguishes them from more modified non-wilderness environments and provides the basis for their human values.

Social qualities of wilderness, such as a visitor's ability to experience solitude, escape from civilization and self-reliance, are also important. However, in my opinion these aspects are secondary attributes as they are dependent on the existence of a wilderness environment and are more easily manipulated by management control than are factors which affect wilderness environments.

The ecological and environmental sciences have clearly demonstrated the interelatedness of all ecosystem components. Therefore, it is difficult and perhaps inappropriate to single out particular environmental components as being "significant" constituents of the wilderness resource. Impacts to any single component will invariably result in indirect impacts to other components. Unfortunately, choices are often required in order to prioritize, limited research and management resources.

The identification of significant conditions, features, and qualities of wilderness resources must, to some extent be area-specific. Acid precipitation and water pollution may be a problem for some areas but not for others. Furthermore, the basis for such an identification must be defined. In my opinion such decisions should be based largely upon ecological factors, such as the sensitivity or resistance to human related impacts and the relative ecosystem importance of the various wilderness environment components. Our present scientific knowledge is far from complete, however, so factors relating to human perception must also be considered. Another constraint is the capability of management to effectively monitor all resource components for human-induced changes. Such constraints have led to the need for selecting only a limited number of impact indicators for each significant environmental component and developing monitoring programs accordingly. A recent study by the University of Idaho identified numerous biophysical indicators based on a common set of evaluative criteria.

Based on my personal opinion and the factors discussed above I would conclude that the most significant qualities of wilderness resources are naturally functioning ecosystems undisturbed by human impacts of any form. External threats, such as air and water pollution, are perhaps the most significant threats to monitor because of their ability to affect entire ecosystems in potentially irreversible ways. Internal impacts, such as fire regime, domestic animal grazing, and recreation use are in many instances also critical.

My own area of expertise pertains to the study and monitoring of vegetation and soil impacts

on recreation sites, so I will confine my comments regarding monitoring to this topic. Recreation sites are often a primary focus of visitor activity in many wildland environments. Such concentrated activity produces adverse physical, vegetative, and soil changes. A solid information base concerning these changes is essential for managers seeking to develop and refine visitor and resource management policies and techniques.

A number of scientific studies have been conducted to evaluate the nature and severity of changes resulting from recreational use of these sites (Cole 1982, 1983 a, Kuss and Graefe 1984, Marion and Merriam 1985, Cole and Marion 1986). A variety of campsite impact assessment and monitoring systems have also been developed to standardize procedures for collecting, summarizing, and evaluating information on recreational impacts. These management-oriented systems provide site-specific information to document changes over time. Such a database allows managers to: 1) detect and evaluate deteriorating or improving conditions on individual or groups of sites, 2) evaluate the success or failure of resource protection measures, and 3) set and monitor limits of acceptable change for resource conditions.

A variety of campsite impact assessment and monitoring systems have been developed for use by resource managers. These include three basic types: 1) *single parameter systems* based on descriptive visual criteria of overall site conditions (Frissell 1978, Hendee et al. 1976), 2) *multiple parameter systems* based on individual appraisals and measurements of specific resource impacts (Parsons and MacLeod 1980, Cole 1983 b), and 3) *photographic systems* based on visual comparison of site conditions (Magill 1965). Cole (1983 b), Marion (1984), and Marion and Cole (1987) have reviewed and evaluated these systems and also discussed important characteristics to consider in the selection of an appropriate system. These include funding and manpower constraints, type and accuracy of information required, number of sites to be assessed, flexibility, and reliability.

In general, single parameter systems are rapidly and easily applied but provide only a summary assessment of site conditions. The visual criteria employed in these systems is somewhat subjective and requires careful training of personnel to achieve consistent results. Multiple parameter systems require more application time but provide reliable information for a variety of impact parameters. This information can also be aggregated to form summary impact ratings. Photographic systems provide useful visual records and are primarily useful as supplementary documentation.

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CONDITIONS, FEATURES, QUALITIES COMPOSING A HIGH QUALITY WILDERNESS RESOURCE

by Stephen F. McCool

1) What are the most significant of these conditions, features and qualities?

This is a good question. And, I am probably not the one to provide a definitive answer. The short and pragmatic answer to this question is look to the Wilderness Act and its legislative history. The long answer, and more philosophical, is to examine and understand the meaning of wilderness. The concept of wilderness, as it is used in our society does not have an accepted and specific definition-- outside of the Wilderness Act. The term "wilderness" is used to refer to many situations ranging from an undeveloped lot in midwestern rural subdivisions to remote, pristine areas of Alaska, Montana and Wyoming. The features of these situations vary significantly, even within the pristine end of the spectrum. (Further, we don't have an accepted definition of what is meant by a "quality" resource.) However, regardless of this variation, it appears that the wilderness concept is usually directed at undeveloped environments, and at ones which are unmodified through direct action on the part of humans. There also appears to be agreement that the concept of "unmodified" also applies to passive human interference, where ecosystems have been human-influenced as a result of the lack of action.

The Leopold report on wildlife management in the national parks, I feel, was a turning point in expanding our definition of wilderness. The Leopold committee, at the very least, implied that parks (as wildernesses) should preserve the operation of natural processes. This shifted, it seems to me, the focus from unmodified and undeveloped landscapes to ecological processes.

Certainly, the term "wilderness resource" has a meaning beyond that of the individual biotic and abiotic components of a particular designated wilderness. Thus, one does not necessarily significantly damage the wilderness resource by causing barren soil impacts at a campsite, for example. The term "wilderness resource", therefore, is concerned with a total greater than the sum of its parts. Management plans which refer to prevention of damage to the wilderness resource generally are referring to soils and vegetation. However, if one defines the wilderness resource in terms of natural processes, then damage accrues only when such processes (weather, flooding, insects and disease, earthquakes, fire, so forth) are prevented from operating or when the consequences of such processes are directly influenced or modified. Thus, the consequences of a flash flood in a wilderness cannot be referred to as "damage" to the fishery or fish habitat.

Beyond the ecological definition of wilderness is the experiential definition. This definition views wilderness as a place for humans to derive specific types of recreational benefits. These are benefits different from those we derive from having a place where ecological processes operate in an unfettered way. This experience is, however, characterized as depending upon a place where these processes operate freely, and where humans, in general, are relatively scarce. I would say this experience should be more inspirational than recreational. This does not rule out recreation from happening in wilderness. Unfortunately, I cannot define what I mean by inspirational.

2) How can these conditions be monitored to ascertain whether or not they are being preserved?

There may be two ways to monitor these conditions. First, assume that wilderness is indeed wilderness and thus monitor only impacts caused by humans. This is what the Limits of Acceptable Change process (as well as other processes) does. This process establishes standards for indicators which are basically biotic or abiotic components of the wilderness which receive impact. It establishes the amount of impact we, in our judgment, are willing to tolerate. A second approach, a more positive one, is to identify indicators of "wildness" and monitor those. In this case, standards would be defined as what we want to achieve rather than what we are willing to tolerate. I have been reminded that monitoring such items as fire rings, barren core, etc.; is trivial; that what we should be doing is monitoring the wilderness resource (as I have attempted to define it above.)

It seems to me that this second approach requires selection of indicators of several different types of things. First, you would want to monitor populations of species (animals and plants) that are found in naturally functioning systems. Second, you would want to monitor processes -- for example, the frequency of lightning strikes or the amount of area burned by naturally occurring fire. Third, some other types of variables which concern wilderness conditions would also be monitored. These might be such things as trail density, and perhaps some other measures of human influence such as air and water quality. Fourth, there would also be some monitoring of human density or encounters. For the first two items at least, there is a difficulty in interpreting data in the short run. Populations rise and fall, weather is different from year to year. If this variation is natural, then that is what you want to occur. So the fact that an elk population has declined naturally is not inherently bad.

Monitoring processes provides an intrinsically difficult challenge. The way we determine what variation in conditions and processes typifies wilderness is through long term observation. To determine if wilderness values are adequately protected, we have to monitor-- or in other words observe. Thus, is what we really observe really wilderness? Because natural processes undoubtedly have many different periodicities (and many of them very long-- for example, glaciation), it may take many, many years to determine if indeed we do have wilderness. This suggests that monitoring conditions or human impact may be a more viable way of determining if wilderness quality or the wild integrity is being adequately protected.

SOME THOUGHTS ON TWO QUESTIONS

By Toivo Sober

Answers to the two questions posed for discussion at the Wilderness Colloquium depends much on the personal experience and values of the individual answering them as on the various components of the wilderness itself. Some people have gone so far as to say that wilderness exists mainly in the mind of the beholder, that it is a perception as variable as the users of the wilderness themselves. Dave Cole and Bob Lucas too, in their letter to participants, must have had similar thoughts since they referred to the first question as the "philosophical part." So I would expand the two questions to:

1. What are the most significant conditions, features, and qualities of wilderness, and *according to whose perception*?

2. How can these conditions be monitored to ascertain whether or not they are being preserved and by *who's standards of acceptability*?

My own role in wilderness management has most often been one of interpreting and implementing the laws and policies applicable to the Boundary Waters Canoe Area Wilderness (BWCAW) in Minnesota. I tend to use the laws as the first source of answers.

As a starting point for answering the first question, the 1964 Wilderness Act defines wilderness as an area " . . . retaining its primeval character and influence . . . managed so as to preserve its natural conditions and which . . . has outstanding opportunities for solitude . . ."

Apply these words to the BWCAW for LAC purposes, we defined its wilderness values as:

1. Opportunity for solitude.
2. Waters free of (or low in) man-caused pollutants.
3. Natural scenery (without man's habitation and development.)
4. Natural system of waterways
5. Fish, vegetation and wildlife which are produced by natural forces.
6. Air free of unnatural odor.
7. Visibility not limited by man-caused impairment.
8. Opportunity for primitive recreation (i.e. challenge, risk, etc.)
9. Natural geologic features.
10. Historic and prehistory resources (i.e. pictographs & prehistoric use sites.)
11. Opportunity for education and scientific research of natural ecosystems.
12. Relative freedom from unnatural sounds.

These values were developed by a professional group, an interdisciplinary team. Perhaps we should also have asked the public at large what it most values about this particular wilderness. We do contact the public in a more general way through our land management planning (Forest Plan) process, but should it be done more specifically through periodic sampling of public opinion on wilderness? The Wilderness Act states that wildernesses will be " . . . administered for the use and enjoyment of the American people . . " Perhaps we should consider not only the people we find using the wilderness but also those who for various reasons have not yet used it or have been displaced due to current management practices.

My own answer to the first of our two questions is that the values developed by professional managers for a particular wilderness be tested against and modified according to the perceptions of a

rather broad sample of the using and/or interested public. This sampling of the public, I believe, should be done at least every 10 or 15 years to reflect the periodic changes in our society.

Answering the second question, it seems to me, is easier, once we have defined the values. Wilderness legislation prescribes some of the standards an professional managers know that limits must be set on some other processes to prevent irreversible damage to wilderness values. But here too, we need to ask our various publics what their perceptions are. Standards and monitoring techniques can then reflect not only the legal mandates and management judgments but also the values and perceptions of the people for whom we manage the wilderness.

Looking aback on an actual case: The development of campsite standards for the BWCAW. They were developed by a group of managers as a part of the LAC process, adapting material from the earlier work of Cole, Marion and Lucas, and we used their advice as well. The standards were field tested in 1985 and full implementation, after adjustments, was scheduled for 1986. Now, nearly at the end of the 1987 season, we are doing only limited monitoring of the sites and have yet to implement the standards themselves.

In reviewing the events during their development, one can identify a number of reasons for our failure to meet original schedule. Reduced wilderness budgets and a shortage of field crew time were a part of the problem. But, in my own opinion, most of the slowdown was attributable to our failure to adequately involve the public and our own field crews. The public, which usually reacts with keen interest even to small changes in BWCAW management, didn't seem to care that we were going to monitor campsite conditions and hoped to limit their size to 1,800 square feet of area and a few other management selected parameters. It apparently was not particularly high on their scale of wilderness values, or they had not been involved enough to recognize the need for campsite management. The reaction of our field crew was positive but not nearly enthusiastic enough for purposeful implementation. The lesson: measure public perception and involve them and the field people early in the process. Our campsite standards will no doubt be implemented, but at a much slower rate.

In summary, I believe that monitoring the public's perception of wilderness values can be just as important as monitoring the wilderness resource itself.

SUMMARY OF DISCUSSIONS

As was true at the two previous NOLS research colloquia, discussions among participants were intense and wide-reaching. Group discussions, using the presentations by each person as a springboard, were the setting for most of the exchange of ideas, and the source for the summary which follows.

The main benefits of the colloquia, however, probably do not come directly from the scheduled programs. Repeatedly one hears that the most useful outcomes of typical research conferences occur in hallways and lobbies, not from the formal presentations-- the conference is almost an excuse to get scientists together so they can interact professionally. That observation is even more true of the NOLS colloquia, but the interaction is in the wilderness, on the trail (I could usually count three separate conversations going on, 95 per cent of them of a professional nature), in camp, out fishing, and even while trying to fall asleep, and it involves more than just scientists. Networks are formed, and ideas are tested and expanded in a way that goes well beyond what happens in the usual conference setting in a hotel.

All participants are together for most of five days with never a telephone call. Some sort of special chemistry has worked on each of the first three colloquia that has resulted in the development of a strong sense of community. Everyone has ample time to express their ideas and all comments seem to be heard and considered thoughtfully and respectfully, even the occasional far out brainstorm. The posturing and status-seeking that is found too often at formal conferences blessedly seems totally absent in the wilderness setting.

The group discussions started with comments about what participants hoped to gain from the session. A wide range of goals emerged: learn about research with practical applications, further development of NOLS research mission, prioritize the qualities that really define wilderness, open up the key issues, explore ways NOLS can provide a service helping with monitoring, the down-to-earth details of how to monitor (hands-and-knees, tape rule procedures,) testing ideas developed in isolation, the functions wilderness serves (what do people take away from it?), the respective roles of managers and researchers and their interaction, identification of research needs, sharpening basic wilderness definitions and especially how to monitor social conditions.

The discussion of colloquium goals was followed by the round-robin responses of every participant to the question about the important qualities of wilderness and how they can be monitored. Written versions of most of these were submitted and included in this report.

Wednesday evening the group developed a list of issues and questions related to the overall theme of the colloquium, with the hope that these could help structure some of our later discussions. The list is difficult to categorize on any single logical dimension or level of generality, but it included the following:

1. The role of zoning wilderness, especially standards for conditions.

2. How to monitor impacts to the wilderness resource.

3. The concept of wilderness as a *combination* of many conditions.

4. Wilderness as a state of mind (cultural definitions of wilderness).

5. Do wilderness experiences require truly natural conditions, or would a reasonable appearance of naturalness suffice?

6. The need to balance concern for terrestrial ecosystems with more attention to aquatic ecosystems.

7. The need to monitor "wilderness manners" exhibited by visitors.

8. How significant ecologically are many of the aspects frequently monitored?

9. How can NOLS best serve as a laboratory for wilderness questions?

10. The balance between biocentric and anthropocentric wilderness concepts.

11. How can education best serve wilderness visitors and managers?

12. How can wilderness researchers, managers, and visitors relate most productively?

13. Can we reduce the most important qualities of wilderness to things we can measure?

We returned to many of these topics in our discussions, although we decided not to try to focus on one or two specifically.

Thursday we reviewed the results of our minimum impact camping above Cloverleaf Lake. Our group campfire the night before on a fire-resistant "blanket" was undetectable. We could find almost no signs of our two nights of use. One tent group challenged the rest to discover where they had cooked. They won; we could not find their kitchen.

A friendly, hungry Wind River bear persuaded us to move camp. Along the way we gathered on a large, rather impacted campsite on Middle Lake -- a site with about 2,500 square feet of devegetated area. This served as a case example for a discussion of acceptability of campsite impacts, and appropriate low impact camping practices, and management actions. The pros and cons of encouraging dispersal or concentration of wilderness were explored. The practice of managers developing tent sites was discussed, without any consensus.

The potential use of wilderness management zones to structure minimum impact messages was considered, with a general feeling that this could be effective.

We returned to our basic theme and finally agreed that we had not been very successful defining wilderness conditions in the abstract. We agreed that it is an extremely difficult question, although critically important. It reminded one of us of trying to define pornography--"I can't define it, but I know it when I see it!" The idea of a standard, agency-wide set of specific wilderness indicators with standards for each, which the Forest Service was considering, was considered a poor approach.

Our last structured discussion centered on future colloquia. A number of ideas were proposed, including:

1. Have each participant come with a problem they are concerned about and a possible solution.

2. Focus on a case study, for example, the new wilderness management plan for Grand Teton National Park.

3. Examine the involvement of the public in wilderness management planning, perhaps using the recent experience in LAC planning

for the Bob Marshall Wilderness complex as a case study.

The NOLS representatives pointed out that future colloquia do not need to be conducted in the Wind River range. NOLS could support a colloquium just about anywhere. NOLS plans to continue sponsoring the colloquia. A volunteer to organize the next one has yet to step forward. We all hope someone will rise to the challenge. Our experience indicates it is some work, but not overwhelming, and very rewarding. We recommend it!

NOLS deserves a great deal of credit for conceiving the colloquia and following through effectively and persistently, and being so tolerant of researchers. The colloquia provide uniquely valuable opportunities for wilderness users, educators, managers and researchers to become well acquainted and to learn from one another.

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